


PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 10589-41-228		FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/US04/21334		International filing date (day/month/year) 02 July 2004 (02.07.2004)		Priority date (day/month/year) 02 July 2003 (02.07.2003)
International Patent Classification (IPC) or national classification and IPC IPC: Please See Continuation Sheet USPC: 435/196,320.1,69.1,325,252.3,19;536/23.2,23.5;530/350				
Applicant PTC THERAPEUTICS, INC.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of ___ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input checked="" type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 31 January 2005 (31.01.2005)		Date of completion of this report 04 December 2007 (04.12.2007)		
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer  Dena M. Ramirez Telephone No. (571) 272-1600		

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Box No. 1 Basis of the report

1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

- ☒ the international application as originally filed/furnished
- ☒ the description:
- pages 1-234 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the claims:
- pages 235-249 as originally filed/furnished
- pages* NONE as amended (together with any statement) under Article 19
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the drawings:
- pages 1-33 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/figs NONE
- ☒ the sequence listing (specify): NONE
- ☒ any table(s) related to the sequence listing (specify): NONE

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(e)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to the sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 1-20, 36, 37 and 39-90

because:

☐ the said international application, or the said claim Nos. _____ relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _____ are so unclear that no meaningful opinion could be formed (*specify*):

☒ the claims, or said claims Nos. 1-20, 36, 37 and 39-90 are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):

Please See Continuation Sheet

☐ no international search report has been established for said claims Nos. _____

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Preliminary Examining Authority in a form and manner acceptable to it.

☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Preliminary Examining Authority in a form and manner acceptable to it.

☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rules 13ter.1(a) or (b) and 13ter.2.

☐ a meaningful opinion could not be formed without the tables related to the sequence listings; the applicant did not, within the prescribed time limit, furnish such tables in electronic form complying with the technical requirements provided for in Annex C-bis of the Administrative Instructions, and such tables were not available to the International Preliminary Examining Authority in a form and manner acceptable to it.

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in electronic form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See Supplemental Box for further details

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Box No. IV Lack of unity of invention

1. ☒ In response to the invitation to restrict or pay additional fees the applicant has, within the applicable time limit:
- ☐ restricted the claims.
 - ☐ paid additional fees.
 - ☐ paid additional fees under protest, and, where applicable, the protest fee
 - ☐ paid additional fees under protest but the applicable protest fee was not paid
 - ☒ neither restricted the claims nor paid additional fees
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is:
- ☐ complied with.
 - ☒ not complied with for the following reasons:

See the lack of unity section of the International Search Report (Form PCT/ISA/210).

4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts
 - ☒ the parts relating to claims Nos. 21-33

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PCT/US04/21334**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims <u>21-23, 30-31</u>	YES
	Claims <u>24-29, 32-33</u>	NO
Inventive Step (IS)	Claims <u>21-23</u>	YES
	Claims <u>24-33</u>	NO
Industrial Applicability (IA)	Claims <u>21-33</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and Explanations (Rule 70.7)

Claims 24-29 lack novelty under PCT Article 33(2) as being anticipated by Strausberg, R., (GenBank accession number BC019582, 03 January 2002). Strausberg teaches a nucleic acid which is longer than the polynucleotide of SEQ ID NO: 11 that comprises all of SEQ ID NO: 11 except that it contains a segment of 51 nucleotides between nucleotides 907-908 of SEQ ID NO: 11. Strausberg, R. also teaches a vector comprising the nucleic acid (pCMV-SPORT6) and a cell comprising the vector (*E. coli* DH10B). Claims 24-29 are directed to a nucleic acid which would hybridize under highly stringent conditions to the nucleic acid of SEQ ID NO: 11, vectors comprising the nucleic acid, and host cells comprising the vector. Since the nucleic acid of Strausberg, R. would hybridize to the polynucleotide of SEQ ID NO: 11 under the conditions recited, the teachings of Strausberg, R., anticipate the instant claims as written.

Claims 32-33 lack novelty under PCT Article 33(2) as being anticipated by Strausberg, R., (GenBank accession number AAH19582, 03 January 2002). Strausberg teaches a protein which is longer than the polypeptide of SEQ ID NO: 12 that comprises all of SEQ ID NO: 12 except that it contains a segment of 17 amino acids between residues 303-304 of SEQ ID NO: 12. The polypeptide of Strausberg, R. is encoded by a nucleic acid which comprises all of SEQ ID NO: 11 except that it contains a segment of 51 nucleotides between nucleotides 907-908 of SEQ ID NO: 11 (GenBank accession number BC019582, 03 January 2002). Claims 32-33 are directed to a protein encoded by a nucleic acid which would hybridize under highly stringent conditions to the nucleic acid of SEQ ID NO: 11. Since the polynucleotide encoding the polypeptide of Strausberg, R., would hybridize to the nucleic acid of SEQ ID NO: 11 under the stringent conditions recited, the teachings of Strausberg, R., anticipate the instant claims as written.

Claims 30-31 lack an inventive step under PCT Article 33(3) as being obvious over Strausberg, R., (GenBank accession number BC019582, 03 January 2002). The teachings of Strausberg, R. have been discussed above. Strausberg does not teach a method to recombinantly produce the polypeptide. Claims 30-31 are directed in part to a method to recombinantly produce a polypeptide encoded by a nucleic acid which would hybridize under highly stringent conditions to the nucleic acid of SEQ ID NO: 11. It would have been obvious to one of ordinary skill in the art to recombinantly produce the polypeptide of Strausberg by transforming a host cell with an expression vector comprising the nucleic acid encoding the polypeptide of Strausberg. One of ordinary skill in the art is motivated to construct such vector, transform a host cell and produce the protein recombinantly for the benefit of producing sufficient amounts of the protein for further characterization in a consistent fashion. There is reasonable expectation of success at recombinantly producing the polypeptide of Strausberg because construction of expression vectors, transformation of host cells with such vectors, and expression of the desired protein in a recombinant host cell are well known and widely used in the art. Therefore, the invention as a whole would have been *prima facie* obvious over the prior art.

Claims 21-23 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest the polynucleotide of SEQ ID NO: 11, the polypeptide of SEQ ID NO: 12, or a polypeptide comprising amino acids 280-330 of SEQ ID NO: 12.

Claims 21-23 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

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Supplemental Box Relating to Sequence Listing

Continuation of Box No. 1, item 2:

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this report was established on the basis of:

a. type of material

- ☒ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☒ on paper
☒ in electronic form

c. time of filing/furnishing

- ☒ contained in the international application as filed
☒ filed together with the international application in electronic form
☐ furnished subsequently to this Authority for the purposes of search and/or examination
☐ received by this Authority as an amendment* on _____

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

* If item 4 in Box No. 1 applies, the listing and/or table(s) related thereto, which form part of the basis of the report, may be marked "superseded."

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Continuation of IPC:

C12N 9/16(2006.01), 15/00(2006.01), 5/10(2006.01), 1/20(2006.01); C12P 21/06(2006.01); C07H 21/04(2006.01); C07K 14/00(2006.01)

C12Q 1/44(2006.01)